

EXHIBIT B

CASE STUDIES AND XENERGY EVALUATION OF THEIR EFFECTIVENESS

3.2.3 Case Studies

The case studies were designed to provide compelling testimonials of successful customers, describing their experience with project planning, implementation and operations, any unanticipated benefits, and how their efforts to install DR technologies paid off. Using a Problem – Solution – Benefits format, the case studies were expected to elicit deeper interest among the targeted audience by:

- Presenting the full range of inherent benefits of DR technologies through a diverse set of successful demand-responsive system installations
- Providing stories the reader can relate to by identifying with the business models profiled
- Communicating that the benefits derived from DR technology's implementation outweigh the costs

The case studies also provided cost data and technical information on what upgrades were installed at each site. For example, a California county upgraded its building automation systems for a 2 million square-foot, five-building county complex. The increased flexibility through upgraded chiller controls allows the county to shed 1.4 MW of load from a peak of 6.8 MW. In another example, a retail chain connected 119 of its stores through a web-based system that allows them to reduce lighting and HVAC loads by up to 2.8 MW. Similarly, a California community college district can now curtail 1.7 MW of their 4.6 MW peak by using a new web-enabled automation system to manage the HVAC and lighting systems.

As shown in Table 3-3, the case studies represented local government buildings, a large retail chain, a hotel, a college, an office campus and a multi-tenant high-rise. Project costs and benefits, as well as technological details, are provided.

**Table 3-3
Enhanced Automation Success Stories**

<i>Building Type</i>	<i>Technology</i>	<i>Project Cost</i>	<i>Annual Savings</i>
Municipal Buildings	Chiller control via EMS/EIS	\$280K	\$70K
Office Campus	Lighting, pumps and fan control via EMS and CO ₂ sensors	\$285K	N/A
Office High Rise	Dimmable ballast and HVAC control via EMS and internet	\$358K	\$114K
College Campus	HVAC on/off and set-point control via EMS/EIS	\$282K	\$30K
Retail Chain	EMS control of HVAC and lighting via pager-based EIS	\$320K	\$140K
Hotel	Standard EMS control of HVAC	\$48K	\$64K

All projects also installed capability to receive 15-minute interval utility data via an EIS on a real-time or next-day basis.

Case Study Selection

The six case studies were drawn from participants in the Energy Commission's 2001 DR Programs funded by AB 970 legislation. Each of the six case studies represents a different customer segment or building type within a target market. The case studies describe project technologies and project installation costs, and examine both expected and unanticipated project benefits. The case studies provide narratives of and customers' experiences with project planning, implementation, operations, and how their efforts to install DR technologies paid off.

Case Study Template

In advance of initiating candidate phone surveys, a preliminary case study template was devised that covered design elements, content format and outline. The case study template went through several iterations, including a significant change of program emphasis away from referring to DR-specific technologies to “Enhanced Automation.”

The final template included a facility photo, a sidebar case study summary, and introductory statements about the participant and the installed project. The center two fold-out pages contain three text sections titled “problem”, “solution” and “benefits”, accompanied by a photo and a project site description sidebar. The back page includes technical project information, a project schematic diagram, and information on how interested parties can take the next step in adopting enhanced building automation systems.

Selection Criteria

To ensure that the case studies selected presented a diversity of stories and well matched to target market segments, the selection criteria were developed at two levels starting with 1) generalized macro-level screening criteria, which then led to 2) more detailed market-segment-specific criteria for selection of individual case study candidates. Macro level criteria included:

- a focus on successful DR applications
- geographic and climate zone diversity
- market segmentation diversity

The second level of selection criteria were effectively used as screening “filters”, and were applied in the following approximate order of importance:

1. Willingness of program participant (critical to successful development)
2. Level of automation/technology (bias toward higher level automation)
3. Type and extent of economic benefit
4. Geographic/climate diversity
5. Diversity of building type, functions and configurations (single/multiple building control systems)
6. Diversity of program administrators (grantees, subcontractors, aggregators)
7. Energy demand (a proxy for building size)
8. Diversity of curtailed end uses (bias toward curtailing HVAC systems)

In each of nine targeted market segments, three or more prospects were identified. A telephone screening process narrowed the selection to the single “best and willing” prospect in each category. The project team found that nearly all candidates were interested in becoming a case study. Interviewees had the opportunity to review and

approve case study content and were awarded a \$2,000 honorarium upon completion of their case study.

Additional telephone interviews and on-site visits were scheduled as needed to compile the relevant information. Separate appointments were scheduled with the designated photographer to obtain the high-quality images required for the final case studies.